Riccò (A.) & Saija (G.) Confronto della Temperatura all' Osservatorio Etneo ed all' Osservatorio di Catania. 8vo. *Catania* 1894. The Authors.

Schreiber (P.) Ableitung der sogenannten Trägheitscurve auf der Erdoberfläche. 4to. *Dresden* 1894. The Author.

Smith (H. J. S.), F.R.S. Collected Mathematical Papers; edited by J. W. L. Glaisher, F.R.S. 2 vols. 4to. *Oxford* 1894. The Delegates, Clarendon Press, Oxford.

Spencer (J. W.) A Review of the History of the Great Lakes. 8vo. [*Minneapolis*] 1894. The Author.

Thomson, Sir William [Lord Kelvin], P.R.S. Popular Lectures and Addresses. Vol. I. Second edition. 8vo. *London* 1891. The Author.

Volterra (V.) Sur les Vibrations des Corps élastiques isotropes. 4to. [*Stockholm*] 1894. The Author.

November 30, 1894.

ANNIVERSARY MEETING.

The LORD KELVIN, D.C.L., LL.D., President, in the Chair.

The Report of the Auditors of the Treasurer's Accounts, on the part of the Society, was presented as follows:—

"The total receipts on the General Account during the past year, including balances carried from the preceding year (£999 7*s.* 11*d.*) and the proceeds of the sale of stock, amount to £10,025 2*s.* 10*d.*, and the total receipts on account of Trust Funds, including balances from the preceding year and cash received for bonds drawn, amounted to £6,065 8*s.* 2*d.* The total expenditure for the same period amounted to £7,227 11*s.* 10*d.* on the General Account, and £4,086 6*s.* 11*d.* on account of Trust Funds, leaving a balance on the General Account of £2,780 7*s.* 1*d.* at the bankers', which includes £500 Challenger Account, £1,700 Catalogue Account, and £247 8*s.* 6*d.* Water Research Account, and a balance of £17 3*s.* 11*d.* in the hands of the Treasurer; leaving also a balance at the bankers' on account of Trust Funds of £1,979 1*s.* 3*d.*"

The thanks of the Society were voted to the Treasurer and Auditors.

The Secretary then read the following Lists :—

Fellows deceased since the last Anniversary (Nov. 30, 1893).

Royal.

H.R.H. Louis Philippe d'Orléans, Count of Paris.

On the Home List.

Armstrong, Robert Young, Col. R.E.
Baker, Sir Samuel White, M.A.
Bowen, Charles Synge C., Lord, D.C.L.
Brown-Séquard, Charles Édouard, M.D.
Coleridge, John Duke, Lord, D.C.L.
Hannen, James, Lord, D.C.L.
Hawkins, Rev. William Bentinck Latham, M.A.
Hodgson, Brian Houghton, D.C.L.
Inglefield, Sir Edward Augustus, Admiral, K.C.B.
Lovelace, William King, Earl of.
Marshall, Arthur Milnes, M.D.
Pengelly, William, F.G.S.
Romanes, George John, M.A.
Topley, William, F.G.S.
Tyndall, John, D.C.L.
Wright, Charles R. Alder, D.Sc.

On the Foreign List.

Beneden, Pierre J. van.
Helmholtz, Hermann Ludwig Ferdinand von.
Marignac, Jean Charles Galissard de.

Withdrawn or Removed.

Basing, George Sclater-Booth, Lord.
Thurlow, Thomas John Hovell-Thurlow Cumming-Bruce, Lord.

Fellows elected since the last Anniversary.

Bateson, William, M.A.
Boulenger, George Albert.
Bradford, John Rose, M.D.
Bryce, Right Hon. James.
Callendar, Prof. Hugh Longbourne.
Cheyne, Prof. William Watson, M.B., F.R.C.S.
Froude, Robert Edmund.
Hill, Prof. M. J. M., M.A., D.Sc.
Jones, Prof. John Viriamu, M.A., B.Sc.
Love, Augustus Edward Hough, M.A.
Lydekker, Richard, B.A.
Penrose, Francis Cranmer, M.A., F.R.A.S.
Scott, Dukinfield Henry, M.A., F.L.S.
Smith, Rev. Frederick John, M.A.
Swan, Joseph Wilson, M.A., F.I.C.
Veley, Victor Herbert, M.A., F.C.S.

On the Foreign List.

Baillon, Henri Ernest.
Poincaré, Henri.
Suess, Eduard.

The President then addressed the Society as follows:—

Since our last Anniversary Meeting, the Royal Society has lost eighteen Fellows and three Foreign Members.

H.R.H. Louis Philippe d'Orléans, Count of Paris, September 8, 1894, aged 56.

John Tyndall, December 4, 1893, aged 73.

The Earl of Lovelace, December 29, 1893, aged 89.

Sir Samuel White Baker, December 30, 1893, aged 72.

Arthur Milnes Marshall, December 31, 1893, aged 41.

Pierre J. Van Beneden, January 8, 1894, aged 93.

William Pengelly, March 16, 1894, aged 82.

Lord Hannen, March 29, 1894, aged 73.

Dr. Charles Édouard Brown-Séquard, April 1, 1894, aged 77.

Lord Bowen, April 10, 1894, aged 58.

Brian Houghton Hodgson, May 23, 1894, aged 94.

George John Romanes, May 23, 1894, aged 46.

Lord Coleridge, June 5, 1894, aged 74.

Charles R. Alder Wright, July 25, 1894, aged 50.

Rev. William Bentinck Latham Hawkins, August 31, 1894, aged 83.

Admiral Sir Edward Augustus Inglefield, September 5, 1894, aged 74.

Hermann Ludwig Ferdinand von Helmholtz, September 8, 1894, aged 73.

Jean Charles Galissard de Marignac, September 15, 1894, aged 77

William Topley, October 2, 1894, aged 53.

Lord Basing, October 22, 1894, aged 68.

Colonel R. Y. Armstrong, November 1, 1894, aged 55.

Biographical notices will be found in the Proceedings.

Science has lost severely during the past year. In the list of Fellows deceased, which I have read to you, you have heard the names of Tyndall, Milnes Marshall, Van Beneden, Pengelly, Brown-Séquard, Romanes, Alder Wright, Helmholtz, Marignac, Topley, all well known to you as having been in their lives zealous and successful scientific investigators, who have largely contributed to the object for which the Royal Society works, "The Increase of Natural Knowledge." Tyndall, full of fire and enthusiasm in solid experimental work advancing the boundaries of science, contributed largely, by his brilliant lectures and books, to make science popular, as it now is in England and America. By the sad death of Milnes Marshall on Scawfell, in Cumberland, on the last day of 1893, we lost a young, able, and enthusiastic worker in zoology. A few months later, we lost the veteran Pengelly, who did so much for geological science, and gave such delightful and valuable lessons to the larger world of

not scientific geologists, in what he did in his exploration of Kent's Cavern, Torquay. Romanes, full of zeal, fighting to the end with the most difficult problems that have ever occupied the mind of man, and devoting his health and his wealth to promote not merely philosophical speculation but also the experimental research by which alone philosophy can have a foundation, left us at the early age of 46.

A year ago, in my anniversary address, I called your attention to Hertz's experimental demonstration of electric waves, which he found in working out an experimental problem originally proposed by Helmholtz to him when he was engaged in experimental researches in the Physical Institute of Berlin in 1879. An English translation by Jones, of Hertz's book describing his work on electric waves, dedicated "with gratitude" to Helmholtz, was published in England and America in December, 1893. On the first day of the new year the disciple died, and within the year the master followed him. Of the whole of Helmholtz's great and splendid work in physiology, physics, and mathematics, I doubt whether any one man may be qualified to speak with the power which knowledge and understanding can give: but we can all appreciate, to some degree, the vast services which he has rendered to biology by the application of his mathematical genius and highly trained capacity for experimental research to physiological investigation.

In his interesting autobiographical sketch he tells us that his early natural inclination was for physics, which he found more attractive than purely geometrical and algebraic studies; but his father could only give him the opportunity of studying physics by his learning medicine to earn a livelihood, and he himself was by no means averse to thus entering on the study of living matter instead of confining himself to the physics of dead matter. I think we may now feel that the world has gained largely by this early necessity for a young man of great genius and power to choose a practical profession.

One early result was his careful examination, while still a student, of the theory of animal heat, and a little later (1847) his great essay, 'Ueber die Erhaltung der Kraft,' Conservation of Energy as we now call it, communicated to the Physical Society of Berlin on the 3rd July, 1847, of which he said in 1891, "My aim was merely to give a critical investigation and arrangement of the facts for the benefit of physiologists." As a student he had found that Stahl's theory, ascribing to every living body the possession of the property of "The Perpetual Motion" as an essence of its "Vital force," was still held by most physiologists. His essay on the "Conservation of Energy," giving strong reasons for rejecting that theory, though looked upon, at first, by many of the physical and philosophical authorities of the time as a fantastic speculation, was enthusiastically welcomed by younger

student-philosophers, and must soon have convinced the elder men that, whatever may be the real efficiency of vitality, vast and wonderful as it is, it does *not* include the performance of work without drawing upon a source of energy. This conclusion had been virtually foreseen before the end of last century by Rumford and Davy, and had been clearly stated and powerfully supported by Joule and Mayer a few years before Helmholtz found it for himself and successfully persuaded others of its truth.

It is interesting for us now to know that, while thus contributing so effectively to the abandonment of the old doctrine that vital "force" can work without drawing on an external source of energy, Helmholtz was even more effectively concerned in the establishment of a new doctrine which has given a vast extension to the province of life, previously perhaps undreamt of, but now universally recognised as thoroughly well established, and supremely important in modern physiology and medicine. On recovering from a typhus fever in the autumn of 1841, at the age of 20, the last year of his undergraduate course in the Army Medical School of the Friedrich Wilhelm's Institute, he spent the accumulations of his income, which free treatment at the hospital during his illness had left him, in the purchase of a microscope, an instrument then but little used in medical education. He began immediately to use it, and made some important observations on the ganglion cells of invertebrates, which, at the suggestion of his master, Johannes Müller, he took as the subject of his inaugural thesis for the doctor's degree, in November, 1842, and which was his first published work.* With the same microscope, he observed vibrios in putrefying liquids, which he described in his second published paper (1843), "On the Nature of Putrefaction and Fermentation." His distinguished comrade, Schwann, in the laboratory of Johannes Müller, had already shown that vegetable cells are present in fermenting solutions of sugar, and that air, which had been highly heated, was incapable of exciting the fermentation which the access of ordinary atmospheric air was known to produce. Helmholtz found that oxygen, yielded by the decomposition of water in flasks containing small pieces of boiled meat, did not produce putrefaction. Thus the doctrine, held perhaps by all before them, and certainly supported by the great Liebig, that putrefaction and fermentation are purely chemical processes of eremacausis (or slow combustion), produced by oxygen, was thoroughly disproved by the two young investigators. But Helmholtz went farther, and showed almost certainly that the actual presence of a living creature, vibrio, as he called it, bacterium, as we more commonly call it now, is necessary for either fermentation or putrefaction. He proved by experiment that a partition of moist bladder, between the yeast and

* Helmholtz's 'Wissenschaftliche Abhandlungen,' vol. 2, p. 663.

the fermentable liquid, prevented the entrance of the vibrios which he had observed, *and prevented the fermentation.* It had been reasonably suggested that fermentation or putrefaction might be a purely chemical process produced by a quasi-chemical agent or poison secreted by a living organism; but Helmholtz's observation disproved this supposition almost certainly, because any such chemical substance in solution would pass by diffusion through the bladder, and produce its effect without any direct action of the living creatures. Although Helmholtz himself was characteristically philosophical and conscientious in not claiming, as absolutely proved, what he had only rendered probable, it is certain that this early work of his on putrefaction and fermentation constituted a very long step towards the great generalisation of Pasteur, adverse to spontaneous generation, and decisive in attributing to living creatures, born from previous living creatures, not only fermentation and putrefaction, but a vast array of the virulent diseases and blights, which had been most destructive to men, and the lower animals and crops and fruits. It is well that Helmholtz himself lived to see the great benefits conferred on mankind by Pasteur's work; and by the annulment of the deadliness of compound fractures and the abolition of hospital gangrene in virtue of Lister's antiseptic treatment; and by the sanitary defences against fevers and blights, realised by many other distinguished men as practical applications of the science which his own typhus fever of 1841 helped so much to create.

Close after his work on this subject and on animal heat, followed investigations on the velocity of transmission along the sensory nerves of the disturbance to which sensation is due, the time which the person perceiving the sensation takes to decide what to do in consequence, and the velocity of transmission of his orders along the motor nerves to the muscles which are to carry out his will. Results of the highest scientific interest and of large practical importance were given in two great papers published in 1850.* These were followed a few years later by his "Tonempfindungen," a great work, not merely confined to the perception of sound, but including mathematical and experimental investigations on the inanimate external influences concerned in sound, investigation of the anatomical structure of the ear in virtue of which it perceives sound, and applications to the philosophical foundation of the musical art, which holds a unique position in the literature of philosophy, and is certainly a splendid monument to the genius and indomitable working power of its author. Another great work of Helmholtz is his "Physiologische Optik;" who shall say which of the two books is the more important, the more interesting, or the more valuable? Each of them has all these qualities to a wonderfully high degree.

* Helmholtz's 'Wissenschaftliche Abhandlungen,' p. 763—861.

Perhaps the most interesting of his experimental investigations in physiological optics was the measurements, by his ophthalmometer, of the curvatures of the several refracting surfaces constituting the lens-system of the eye, from which he ascertained that it is almost altogether by changing the curvature of the front surface of the crystalline lens that the eye is accommodated by its possessor to vision at different distances. His ophthalmoscope, by which for the first time he himself saw and showed to others the retina of the living eye, was a splendid and precious contribution to medicine. By allowing that outlying portion of the brain to be distinctly seen and examined, it has shown the cause of many illnesses which had been regarded as hopelessly obscure; and for diagnosis and guidance of medical treatment, it is now continually used not only by oculists, but by general practitioners.

Constrained as I feel not to overtax your patience, I find it impossible on the present occasion, to enter upon Helmholtz's researches in mathematics and mathematical physics farther than just to mention his small but exquisite paper on anomalous dispersion, and the grand contribution to hydrodynamics which we have in his "Integrals of the Hydrodynamical Equations which express Vortex Motion."*

Since our last anniversary, important questions regarding the conduct of the ordinary meetings and the publication of papers, both in the 'Transactions' and 'Proceedings' of the Royal Society, have been engaging the attention of the Council, with the assistance of a Committee appointed on the 5th July, 1893. The final report of this Committee was submitted to the Council on the 5th July, 1894, when resolutions were adopted accepting some of its recommendations and deferring the consideration of others until after the recess.

At the request of the Royal Geographical Society, a Committee was appointed by the Council of the Royal Society to consider the advisability of asking the Government to undertake an Antarctic Expedition. A very important and valuable Report on the advantages which such an expedition would bring, both to science and to practical navigation, was presented by this Committee to the Council on the 24th May. The Council, after much careful consideration, resolved to ask the Lords of the Admiralty to grant an interview on the subject with representatives of the Royal Society. This request was assented to: and an interview was accordingly held between the First Lord of the Admiralty and representatives of the Royal Society; but the proposal of an Antarctic Expedition was not favourably received.

The Joule Fund Committee submitted its report on the 7th

* 'Philosophical Magazine,' July, 1867, being the translation by Tait of the original German paper, which appeared in Crelle's Journal in 1858, and which has been republished in 'Wissenschaftliche Abhandlungen,' vol. 1, pp. 101—134.

December, 1893, and the Council, on its recommendation, adopted the following resolutions:—

I. That the Regulations for administering the Joule-Memorial Fund be as follows:—

(1) That the proceeds be applied in the form of a studentship or grant, to be awarded every second year, to assist research, especially among younger men, in those branches of physical science more immediately connected with Joule's work.

(2) That this grant be international in its character, and awarded alternately in Great Britain and abroad, or in such order as the President and Council shall from time to time decide.

(3) That it be awarded in Great Britain by the President and Council of the Royal Society; and, for award in France, offered to the Académie des Sciences, Paris; and in Germany to the K. Akademie der Wissenschaften, Berlin; or, in any other country, to the leading scientific institution, for award in that country.

(4) That the award in Great Britain be made on the recommendation of a Committee, from time to time appointed by the President and Council of the Royal Society, but not of necessity confined to Fellows of the Society.

II. That a sum of £100, which is now, or shortly will be, available, for the first studentship or grant be awarded in accordance with Regulation 4.

The first appointment was accordingly made on the 21st June, 1894, when it was resolved:—

(1) "That a Joule Scholarship of the Royal Society Memorial Fund be awarded to Mr. J. D. Chorlton, of Owens College, Manchester, for the purpose of enabling him to carry on certain researches on lines laid down by Dr. Joule, more especially with the view of determining the constants of some of the instruments employed by Dr. Joule, which can be placed at his disposal by his representatives."

(2) "That the value of the Scholarship be £100, payable quarterly, on the certificate from the authorities of Owens College that the researches are being conducted in a satisfactory manner."

On the occasion of Sir George Buchanan's retirement from the post of Chief Medical Officer to the Local Government Board, it was decided by some of his friends that a testimonial should be presented to him, and a sum, amounting to about £340, has been subscribed by medical officers of health, sanitary engineers, and others interested in sanitary science. It was resolved, on the suggestion of

Sir George Buchanan himself, that this testimonial should take the form of a medal, to be awarded periodically for work done in connection with sanitary science, and that the Royal Society should be asked to administer the testimonial fund under the following conditions:—

1. The money collected, after paying expenses incurred, to be devoted—

(*a*) To the foundation of a Gold Medal of the value as nearly as may be of twenty guineas, with a portrait of Sir George Buchanan on the one side and an appropriate design on the other, to be awarded every three or five years in respect of distinguished services to Hygienic Science or Practice, in the direction either of original research or of professional, administrative, or constructive work.

(*b*) To the bestowal on the recipient of the Medal of the amount (remaining after paying for the Medal and discharging the incidental expenses) which has accumulated since the last award.

2. The Medal to be awarded without limit of nationality or sex.

The Council of the Royal Society has accepted the Trust under these conditions; and it was agreed that the first medal should be given to Lady Buchanan by the testimonialists themselves.

The Catalogue Department has been specially active in the past session. Mr. Ludwig Mond's generous gift of £2000, which I announced to the Society in my Anniversary Address last year, has given a new impulse to our operations in that department, and enabled us to increase the staff of assistants. Under the able superintendence of Miss Chambers, Volume 10 of the Catalogue under authors' names has been completed, and was issued in June of the present year. The Society is indebted to several members of the Catalogue Committee who have lent their scientific knowledge to aid in the revision of the proofs, and especially to the Treasurer, under whose experienced eye every sheet in the Catalogue has passed. The preparation of copy for a supplementary volume, which will include papers from a large number of periodicals not included in the existing volumes, is now nearing completion.

The Catalogue Committee have held several meetings and discussed some important questions. The proposed subject-index to the existing Catalogue has been the chief matter under consideration, and the burning question of the respective merits of an alphabetical and a classified index has been so far settled as to make it possible to commence the work of transcription and translation, nearly 40,000 slips being already finished, so that when the details of the plan agreed upon have been finally settled, as there is good hope they will

be in the near future, the preparation of the copy for the printer can be speedily proceeded with. Before, however, any final steps can be taken, it will be necessary that the supplement volume of the catalogue should have issued from the press. The preparations for this volume are in active progress.

A kindred subject, but one of still wider scope, has been discussed by a Special Committee appointed by the Council at their first meeting in the present session. The question, namely, of a scientific subject-catalogue, which it is proposed to carry out by means of international co-operation. This Committee, with the sanction of the Council, have addressed a circular letter to scientific societies and institutions in this country and abroad, proposing by way of preliminary suggestions, first, that the Catalogue should commence with the next century; secondly, that a central office or bureau should be maintained by international contributions; and third, that this office should be supplied with all the information necessary for the construction of the Catalogue. The circular invites the views on this subject of scientific bodies and scientific men, without in any way committing the Society to farther action. A large number of replies to this circular have been received, many of them carefully prepared and able documents. They will be submitted to the new Council of the Royal Society, and will, I am sure, be most valuable in assisting it to judge as to future proceedings.

The principal question which the Library Committee have had before them during the past session is the accumulation of the stock of 'Philosophical Transactions' from the beginning of the century to the present time. New racks have been erected in the basement which have partly relieved the pressure on our space, but the Committee recognise the necessity of some active measures being taken to increase the sale of this accumulated stock. They are of opinion that the sale might be much facilitated if the memoirs composing the volumes published in the past were made separately available to the public, as is done with those that are published at the present time. On the advice of the Committee, the Council have empowered the Treasurer to treat with one of the leading booksellers with the view of bringing some such arrangement into effect.

The collection of marble busts belonging to the Society, which is of such personal and historical interest to all our Fellows, has received most important and valuable accessions. The sons of our former President, Mr. William Spottiswoode—Messrs. Hugh and Cyril Spottiswoode—have presented to the Society a marble bust of their father, by Woolner, which will find in our apartments a fitting home among the busts of many of our former Presidents and distinguished Fellows, and will hand down to posterity a striking likeness of one who deserved so well of the Society and whose premature decease we

all still deplore. Earlier in the session, Mr. Alfred W. Dollond presented a marble bust by Garland, of his great-uncle, George Dollond, F.R.S., who himself presented a bust of John Dollond, in 1843, by the same sculptor.

The House and Soirée Committee have discussed the advisability of increasing the accommodation in the tea room, and have presented a report to the Council upon the subject. The Council, while not disagreeing with this report, considered it wiser, in the present state of finances, to defer the matter for a time.

A third Report of the Water Research Committee has been issued during the present year. It gives the results of further experiments by Professor Marshall Ward on the "Action of Light on Bacillus Anthracis," and on the "Bacteria of the Thames," and the experiments of Professor Percy Frankland on the "Behaviour of the Typhoid Bacillus and of the *Bacillus Coli Communis* in Potable Water," the whole filling 242 octavo pages.

Unusually large as was the amount of matter published last year, this year the amount is even larger. In the mathematical and physical section of the 'Philosophical Transactions,' seventeen papers have been published, eighteen in the biological section. The two sections together contain, in all, 1992 pages of letterpress, and 112 plates; to which must be added eight or ten papers now passing through the press, and probably to be issued before the close of the year. Of the 'Proceedings,' ten numbers have been issued, containing 1026 pages. As a result, the finances of the Society are, I regret to say, in not such a satisfactory condition as could be desired. The cost of the publications, which, last year, was far in excess of what it was in previous years, and of what the Society could really afford, has, in the year 1894, amounted to nearly £3260, or about £90 more than it was in 1893. For lithography and engraving alone £1516 have been paid, as against £977 last year. There is, moreover, an accumulation of printed matter now almost in readiness to be issued, the cost of which has still to be defrayed. To meet this extraordinary expenditure it has been necessary to sell out enough of the Society's funded capital to produce £1000, and rigorous retrenchment will be necessary in order to avoid further loss of provision for continued work in future. While the Council feels the importance of all the publications of the Society being as completely illustrated and as fully detailed as the subjects discussed may require, it is evident that some check must be placed on the extent of the publications, and the best manner of effecting this end is occupying the careful attention of the Council.

The establishment of the Faraday-Davy Research Laboratory, in connexion with the Royal Institution, is a splendid benefaction which science has gained during the past year, through the untiring and

grand generosity of Mr. Ludwig Mond. The Royal Society interests itself in all work contributing towards the object for which it was founded—the increase of natural knowledge; and while gratefully remembering the assistance so generously given to it in the humble but highly valuable work of cataloguing papers which describe the results of scientific investigations already made, it hails with delight this grand foundation of a practical laboratory, of which the purpose is not the teaching of scientific truths already discovered, but the conquering of fresh provinces from the great region of the unknown in Nature.

The greatest scientific event of the past year is, to my mind, undoubtedly the discovery of a new constituent of our atmosphere. If anything could add to the interest which we must all feel in this startling discovery, it is the consideration of the way by which it was found. In his Presidential address to Section A of the meeting of the British Association at Southampton in 1882, Lord Rayleigh, after calling attention to Prout's law, according to which the atomic weights of the chemical elements stand in simple relationship to that of hydrogen, said:—"Some chemists have reprobated strongly the importation of *à priori* views into the consideration of the question, and maintain that the only numbers worthy of recognition are the immediate results of experiment. Others, more impressed by the argument that the close approximations to simple numbers cannot be merely fortuitous, and more alive to the inevitable imperfections of our measurements, consider that the experimental evidence against the simple numbers is of a very slender character, balanced, if not outweighed, by the *à priori* argument in favour of simplicity. The subject is eminently one for further experiment; and as it is now engaging the attention of chemists, we may look forward to the settlement of the question by the present generation. The time has, perhaps, come when a re-determination of the densities of the principal gases may be desirable—an undertaking for which I have made some preparations." The arduous work thus commenced in 1882, has been continued for 12 years,* by Rayleigh, with unremitting perseverance. After 11 years of it, a first important part of the object, the determination of the atomic weight of oxygen with

* "On the relative Densities of Hydrogen and Oxygen. Preliminary Notice," by Lord Rayleigh, February 2, 1888.
"On the Composition of Water," by Lord Rayleigh, February 26, 1889.
"On the relative Densities of Hydrogen and Oxygen. II." By Lord Rayleigh, February 5, 1892.
"On the Densities of the principal Gases," by Lord Rayleigh, March 23, 1893.
"On an Anomaly encountered in Determinations of the Density of Nitrogen Gas," by Lord Rayleigh, April 19, 1894.
All published in the 'Proceedings of the Royal Society.'

all possible accuracy was attained by the comparison,* of Scott's determination of the ratio of the volumes of hydrogen and oxygen in the constitution of water, with Rayleigh's determination of the ratio of the densities. The result was 15·82, which is almost 1 per cent. (0·87 per cent.) less than the 16, which it would be according to Prout's law. It is very slightly less ($\frac{1}{4}$ per cent.) than Dittmar and Henderson's value obtained by an investigation† for which the Graham medal of the Glasgow Philosophical Society was awarded in 1890. Values, not quite so small as these for the atomic weight of oxygen, had been previously found by Cooke and Richards (15·869) and by Leduc (15·876). There can be no doubt whatever now that the true value is more than $\frac{1}{2}$ per cent. smaller than according to Prout's law, and that in all probability it agrees exceedingly closely with the results obtained by Rayleigh and Scott, and by Dittmar and Henderson. The question of Prout's law being thus so far set at rest, Rayleigh, persevering in the main object which he had promised in 1882, "a redetermination of the densities of the principal gases," attacked nitrogen resolutely and, stimulated by most disturbing and unexpected difficulties in the way of obtaining concordant results for the density of this gas as obtained from different sources, discovered that the gas left by taking vapour of water, carbonic acid, and oxygen from common air was denser‡ by 1/230 than nitrogen obtained by chemical processes from nitric oxide or from nitrous oxide, or from ammonium nitrite, thereby rendering it probable that atmospheric air is a mixture of nitrogen and a small proportion of some unknown and heavier gas. Rayleigh, and Ramsay who happily joined in the work at this stage, have since succeeded in isolating the new gas, both by removing nitrogen from common air by Cavendish's old process of passing electric sparks through it, and taking away the nitrous compounds thus produced by alkaline liquor; and by absorption by metallic magnesium. Thus we have a fresh and most interesting verification of a statement which I took occasion to make in my Presidential address to the British Association in 1871,§ "Accurate and minute measurement seems to the non-scientific imagination a less lofty and dignified work than looking for something new. But nearly all the grandest discoveries of science have been but the rewards of accurate measurement and patient long-continued labour in the minute sifting of numerical results." The investigation is now being carried on vigorously, and has already

* Scott, "On the Composition of Water by Volume," communicated by Lord Rayleigh, 'Roy. Soc. Proc.,' March 23, 1893.

† 'Proceedings of the Philosophical Society of Glasgow,' 1890—1891.

‡ "On an Anomaly encountered in Determinations of the Density of Nitrogen Gas," 'Roy. Soc. Proc.,' April, 1894.

§ Republished in Volume 2 of 'Popular Lectures and Addresses.'

led to the wonderful conclusion that it does not combine with any other chemical substance which has hitherto been presented to it. We all wait with impatience for further results of the work; we wish success to it, and we hope that it will give us, before the next anniversary meeting of the Royal Society, much knowledge of the properties, both physical and chemical, of the hitherto unknown and still anonymous fifth constituent of our atmosphere.

Copley Medal.

Dr. Edward Frankland, D.C.L., F.R.S.

The Copley Medal is awarded to Dr. E. Frankland for his eminent services to theoretical and applied chemistry.

At a time when the classification of organic compounds in homologous series was a comparative novelty, when isomerism was still a profound mystery, and the theory of compound radicles introduced by Liebig was still on its trial, Dr. Frankland made his first attempt (in 1848) to isolate the radicle of common alcohol. Though the attempt was in one sense unsuccessful, inasmuch as the free radicle was never obtained, for reasons which we now more fully understand, the research led to important consequences. The discovery of the organo-metallic compounds, and the study of their composition and properties, was followed by a recognition of the fact, first that the capacity for combination possessed by the atoms of the metals was limited ('Phil. Trans.,' 1852), and secondly that variation of "atomicity," as it was then called, usually occurs by an even number of units ('Journ. Chem. Soc.,' 1866), represented by atoms of hydrogen, chlorine, or such compound radicles as methyl, ethyl, and the rest. These discoveries form the basis of the modern doctrine of valency, with all the important consequences that follow, including the idea of the orderly linking of atoms, and hence the theories of structure or constitution now current.

The discovery of zinc ethyl placed in the hands of chemists an important new instrument of research, which Dr. Frankland was himself the first to use in his investigations concerning the synthetical production of acids of the lactic and acrylic series. Further important synthetical work, conducted in concert with Mr. Duppa, led to a method of ascending the series of acids homologous with acetic acid.

Dr. Frankland's researches in pure chemistry are almost rivalled in interest by his discoveries in physical chemistry, especially in relation to the influence of pressure on the rate of combustion, on the light emitted during combustion, and on the cause of luminosity in hydrocarbon flames.

The important work done by Dr. Frankland in the study of water-

supply and sewage, and illuminating gas, has proved of great practical value, and has rendered his name famous in connection with the application of chemistry to technical purposes.

Rumford Medal.

Professor Dewar.

During more than twenty years past Professor Dewar has been engaged in researches of great difficulty, in the first instance at very high, and latterly at very low temperatures, his inquiries having extended over an extraordinarily wide field, as will be seen by reference to the 'R.S. Catalogue' of scientific papers.

In conjunction with Professor Liveing, he has communicated to the Royal Society a large number of papers which have added much to our knowledge of spectroscopic phenomena.

During recent years he has made the liquefaction of gases a subject of deepest study, and in the course of this work has displayed not only marvellous manipulative skill and fertility of resource, but also great personal courage, such researches being attended with considerable danger. One of his chief objects has been so to improve and develope the methods of liquefying the more permanent gases that it shall become possible to deal with large quantities of liquid, and to use such liquids as instruments of research in extending our knowledge of the general behaviour of substances at very low temperatures. In this he has already been highly successful. Not only has he succeeded in preparing large quantities of liquid oxygen, but he has been able by the device of vacuum-jacketed vessels to store this liquid under atmospheric pressure during long periods, and thus to use it as a cooling agent. Very valuable outcome of these labours has been the series of determinations, made by him in conjunction with Dr. Fleming, of the electrical conductivity of metals at exceedingly low temperatures, which have furnished results of a most unexpected character, and of extraordinary interest and importance. Professor Dewar's experiment showing the great magnetic susceptibility of liquid oxygen is exceedingly important and interesting. His recent observations on phosphorescence, and on photography,* and on ozone† at very low temperatures, have given surprising results of a highly instructive and interesting character. It is difficult to exaggerate the importance of extending these researches, which certainly deserve all possible encouragement and support. The award of the Rumford Medal to Professor Dewar is made in recognition of the services which he has rendered to science by the work which he has already done and

* 'Chem. Soc. Proc.,' June 28, 1894.

† 'Phil. Mag.,' August, 1894, pp. 238, 239.

the provision he has been successful in making for future work, in the investigation of properties of matter at lowest temperatures.

Royal Medal.

Professor J. J. Thomson, F.R.S.

Professor J. J. Thomson has distinguished himself in both mathematical and experimental fields of work. His first essay on vortex rings showed power of grappling with difficult problems, and added to our knowledge concerning the encounter of rings which came within a moderate distance of one another so as to deflect each others' paths.

His theoretical work in the borderland of chemistry and physics has been very interesting and suggestive. His experimental work has likewise been mainly on the borders of chemistry and physics. He has observed the large conductivity of many gases and vapours, and proved the non-conducting power of several others, founding on the conducting power of iodine vapour important speculations as to its probable chemical constitution.

He has also measured the specific resistance of various electrolytes, under extremely rapid electric oscillations, by an ingenious and valuable method, based on the partial opacity of semi-conducting matter to electro-magnetic waves. Recently he has worked at the discharge of electricity through rarefied gases, getting induced currents in closed circuits in sealed bulbs without electrodes, and, in especial, measuring to a first approximation the absolute velocity of the positive discharge through a long vacuum tube, proving that it was comparable with, though decidedly less than, the velocity of light. He also gave an ingenious theory of the striæ—a theory which he has since endeavoured, with some success, to extend to a large number of electrical phenomena, the whole of electric conduction and induction being regarded by him from the chemical side as a modified or incipient electrolysis, or as concerned with electrolytic chains of molecules or "Faraday tubes."

Some of his recent mathematical work on the theory of electric oscillations in spheres and cylinders, and in dumb-bell oscillators of the kind used by Hertz, with reference to not only their oscillation-frequency but also their damping efficiency, has been of much service to experimental workers in those branches of physics. And, in general, the effective manner in which he attacks any electrical problem presenting itself, as evidenced by his book on Recent Researches in Electricity and Magnetism, wherein he worthily carries on into a third volume the great treatise begun by Clerk Maxwell, is evidence of consummate ability combined with remarkable energy and power of work.

Royal Medal.

Professor Victor Horsley, F.R.S.

A Royal Medal is awarded to Professor Victor Horsley, F.R.S., for his laborious and fruitful researches in physiology and pathology, and particularly for those relating to the functions of the nervous system and of the thyroid gland. His inquiries relating to the former subject have been pursued for more than ten years, and have been communicated to the Royal Society in a succession of papers, the most important of which have been published in the 'Philosophical Transactions.' The first of the series of researches ('Phil. Trans.', 1888), which was conducted in co-operation with Professor Schäfer, and concerned the relation of a part of the cerebral cortex (the limbic lobe) to sensation, afforded a new confirmation and extension of the doctrine of the localisation of cerebral function now generally accepted. While this work was in progress, Professor Horsley engaged with Dr. Beevor in a long and laborious series of experiments, for the purpose of determining with the utmost attainable accuracy the nature of the muscular responses which are evoked by stimulating the convolutions in the quadrumana. The results of these researches were communicated in four papers, of which the first three relate to the "cortical representations" of the movement of the limbs, and of those of the tongue and face ('Phil. Trans.,' 1887—1890); the fourth to the channels (in the internal capsule) by which the cortex exercises its influence on the rest of the nervous system ('Phil. Trans.,' 1890).

These experiments not only served to bring to light a number of new facts, and to elucidate their physiological relations in a very remarkable way, but had a special interest in their bearing on the physiology and pathology of the brain in man. Their importance in this respect is enhanced by the circumstance that in the course of the enquiry the opportunity offered itself of comparing the brain of the monkey with that of the orang ('Phil. Trans.,' 1890), a brain which so closely approaches that of man in its structure that the knowledge acquired by these researches may now be confidently used as a guide in the diagnosis and treatment of cerebral disease. Professor Horsley has himself shown—and this is not the least of the merits which it is desired to recognise in the bestowal of the Royal Medal—in how many instances the knowledge which is acquired by patient and skilful work in the laboratory may be made available for the saving of life, or the alleviation of human suffering.

In connection with this leading series of researches, two others relating to the physiology of the central nervous system must be referred to. In one of these ('Phil. Trans.,' 1890), Professor Horsley (in co-operation with Dr. Semon) established the existence, not only

of a co-ordinating centre in the bulb, but of a cortical area in physiological relation with the respiratory and phonatory movements of the larynx; in the other, in conjunction with Professor Gotch, he investigated the electrical changes in the spinal cord which are associated with excitation of the cortex and internal capsule, and showed how the observation of these facts can be made available for tracing channels of conduction in the cord.

As regards the thyroid gland, Professor Horsley's inquiries relating to functions of that organ were, like those relating to the nervous system, begun ten years ago, though the results were not communicated to the Royal Society until three years later. Their purpose was to ascertain the nature of the very marked influence which the thyroid was known to exercise on the nutritive functions of the organism, and to show that this influence is constant and definite. In this field, Professor Horsley has not only the merit of having been one of the earliest workers, but of having at this early period arrived at results which the numerous investigations of subsequent writers have in all essential particulars confirmed.

Davy Medal.

Professor Peter Theodor Cleve.

The Davy Medal is awarded to Peter Theodor Cleve, Professor of Chemistry in the University of Upsala, for his services to chemical science during the last thirty years, and in particular for his long-continued and valuable researches on the chemistry of the rare earths.

This field of inquiry is pre-eminently Scandinavian. By the manner in which he has cultivated it, Professor Cleve has shown himself a worthy successor of such forerunners as Gadolin, Berzelius, and Mosander, and by sound and patient investigation he has faithfully upheld the traditions inseparably associated with these names. All chemists are agreed that no department of their science demands greater insight or more analytical skill than this particular section. Many of the minerals which furnish the starting point for investigation are extremely rare, and the amounts of the several earths which they contain are frequently very small. Moreover, the substances themselves are most difficult of isolation, and their characters are so nearly allied that the greatest care and judgment are required in order to determine their individuality.

A remarkable example of Professor Cleve's power in overcoming these difficulties is seen in his masterly inquiry into the affinities and relations of the element scandium, discovered by Nilson. This, one of the rarest of the metals, is found only in gadolinite to the extent of 0·003 per cent., and in yttrotitanite to the extent of about 0·005 per cent. The whole amount of the material, as oxide, at Cleve's

disposal was only about 1 gram, but with this small quantity he determined the atomic weight of the element, and ascertained the characters of its salts with such precision as to leave no doubt of the identity of scandium with the element *Ekabor*, the existence of which was predicted by Mendeleef, in the memorable paper in which he first enunciated the Law of Periodicity. Cleve's research, indeed, constitutes one of the most brilliant proofs of the soundness of the great generalisation which science owes to the Russian chemist.

A not less remarkable instance of Cleve's skill as a worker is seen in his research on samarium and its compounds, which he communicated, as one of its Honorary Foreign Fellows, to the Chemical Society of London. The existence of samarium was inferred independently by Delafontaine and Lecoq de Boisbaudran, but we owe to Cleve the first comprehensive investigation of its characters and chemical relations. From the nature of its compounds, a large number of which were first prepared and quantitatively analysed by Cleve, and from the value of its atomic weight, which was first definitely established by him, it would appear that samarium most probably fills a gap in the eighth group of Mendeleef's system.

We are further indebted to Cleve for a series of determinations of the atomic weights of the rare substances yttrium, lanthanum, and didymium; these are generally accepted as among the best authenticated values for these particular bodies.

No record of Cleve's scientific activity would be complete without some reference to his investigations in the domain of organic chemistry, and more particularly to his studies, extending over twenty years, of naphthalene derivatives. By these researches, made partly independently, and partly in conjunction with his pupils, among whom may be named Atterberg, Widman, Forsling, and Hellström, Cleve has gradually brought order out of confusion, and has supplied most valuable experimental evidence of the constitution of naphthalene, and of the course of substitution of naphthalene derivatives. Within recent years a score of workers have occupied themselves with the same field of research, and no greater proof of Cleve's accuracy and care as an investigator could be furnished than the manner in which his naphthalene work—confessedly one of the most intricate and complicated sections of the chemistry of aromatic compounds—has stood the ordeal of revision.

Darwin Medal.

Rt. Hon. T. H. Huxley, F.R.S.

The Darwin Medal is awarded to Thomas Henry Huxley.

Of Mr. Huxley's general labours in biological and geological

science I need say nothing here. They are known of all men, and the Society showed its appreciation of their worth when it awarded to him the Copley Medal in 1888. The present medal is a token of the value put by the Society on the part of his scientific activity bearing more directly on the biological ideas with which the name of Charles Darwin will always be associated.

All the world now knows in part, no one perhaps will ever know in full, how, in the working out of his great idea, Darwin was encouraged, helped, and guided by constant communion with three close and faithful friends, Charles Lyell, the younger Joseph Dalton Hooker, and the still younger Thomas Henry Huxley. Each representing more or less different branches of science, each bringing to bear on the problems in hand more or less different mental characters, all three bore share, and were proud to bear share, in aiding the birth of the "Origin of Species." Charles Lyell has long been removed from us. Two years ago it was my pleasing duty to place the Darwin Medal in the hands of Joseph Dalton Hooker; that pleasing duty is renewed to-day in now giving it to the last of the three "who kept the bridge."

To the world at large, perhaps, Mr. Huxley's share in moulding the thesis of "Natural Selection" is less well known than is his bold unwearied exposition and defence of it after it had been made public. And, indeed, a speculative trifler, revelling in problems of the "might have been," would find a congenial theme in the inquiry how soon what we now call "Darwinism" would have met with the acceptance with which it has met, and gained the power which it has gained, had it not been for the brilliant advocacy with which in its early days it was expounded to all classes of men.

That advocacy had one striking mark; while it made or strove to make clear how deep the new view went down and how far it reached, it never shrank from striving to make equally clear the limits beyond which it could not go. In these latter days there is fear lest the view, once new but now familiar, may, through being stretched farther than it will bear, seem to lose some of its real worth. We may well be glad that the advocate of the "Origin of Species by Natural Selection," who once bore down its foes, is still among us, ready, if needs be, to "save it from its friends."

The Statutes relating to the election of Council and Officers were then read, and Professor Armstrong and Admiral Sir Erasmus Ommanney having been, with the consent of the Society, nominated Scrutators, the votes of the Fellows present were taken, and the following were declared duly elected as Council and Officers for the ensuing year:—

President.—The Lord Kelvin, D.C.L., LL.D.

Treasurer.—Sir John Evans, K.C.B., D.C.L., LL.D.

Secretaries.— { Professor Michael Foster, M.A., M.D.
The Lord Rayleigh, M.A., D.C.L.

Foreign Secretary.—Sir Joseph Lister, Bart., F.R.C.S.

Other Members of the Council.

Andrew Ainslie Common, LL.D.; William Crookes, F.C.S.; Francis Darwin, M.A.; Andrew Russell Forsyth, Sc.D.; Sir Douglas Galton, K.C.B.; Professor Alexander Henry Green, M.A.; Sir John Kirk, K.C.B.; Professor Horace Lamb, M.A.; Professor Edwin Ray Lankester, M.A.; Professor Alexander Macalister, M.D.; Professor John Henry Poynting, D.Sc.; Professor Arthur William Rücker, M.A.; Osbert Salvin, M.A.; Professor J. S. Burdon Sanderson, M.D.; Thomas Edward Thorpe, Sc.D.; William Henry White, C.B.

The thanks of the Society were given to the Scrutators.

Balance Sheet. 1894.

Statement of Receipts and Expenditure from November 12th, 1893, *to November* 12th, 1894.

	£	s.	d.	£	s.	d.
To Balance at Bank, 12th November, 1893				2,875	16	6
„ Balance in hand, Catalogue Account	3	3	3			
„ „ Petty Cash	7	0	1	10	3	4
„ Compositions				60	0	0
„ Admission Fees				10	0	0
„ Annual Contributions, 121 at £4	£484	0	0			
„ 196 at £3	588	0	0	1,072	0	0
„ Fee Reduction Fund, in lieu of Admission Fees and Annual Contributions				342	0	0
„ Rents:	£	s.	d.			
Fee Farm, Lewes	18	12	0			
Mablethorpe Estate	77	1	10	95	13	10
„ Ground Rents				600	11	9
„ Dividends (exclusive of Trust Funds)				2,055	3	11
„ Interest on Mortgage Loans (Duke of Norfolk)				515	7	10
„ Sale of Transactions and Proceedings				678	0	1
„ Interest on Bank Deposit Account				25	18	10
„ Interest on Bank Deposit (Catalogue Account)				25	18	10
„ Sale of Catalogue				22	17	8
„ Transfer from Handley Fund on account of Catalogue				186	2	4
„ Sale of Krakatoa Report (leaving £62 10*s.* 4*d.* Expenditure in excess of Receipts)				....	....	....
„ Sale of Lendenfeld Monograph (leaving £664 19*s.* 1*d.* Expenditure in excess of Receipts)				....	....	....
„ Water Research Grants				250	0	0
„ Kew Committee—Repayment of Loan				200	0	0
„ Proceeds of Sale of £722 14*s.* 1*d.* India 3 per Cent. Stock				724	9	2
„ Ditto, £270 11*s.* 11*d.* 2¾ per Cent. Consolidated Stock				274	18	9
				£10,025	2	10

	£	s.	d.	£	s.	d.
By Salaries and Wages				1,443	10	4
„ Catalogue of Scientific Papers and Index				754	5	3
„ Books for the Library				321	9	10
„ Printing Transactions, and Separate Copies to Authors and Publisher	446	1	10			
„ Ditto Proceedings, Nos. 327 to 337	538	10	11			
„ Ditto Miscellaneous	191	5	3			
„ Paper for Transactions and Proceedings	478	2	8	3,259	2	2
„ Binding ditto	89	2	0			
„ Engraving and Lithography	1,515	19	6			
„ Soirée and Reception Expenses	101	2	7	141	14	7
„ Anniversary Expenses	40	12	0			
„ Coal, Lighting, &c.	163	1	5			
„ Office Expenses	73	12	10			
„ House Expenses	563	2	0			
„ Tea Expenses	18	8	7			
„ Fire Insurance	55	5	0			
„ Taxes	51	11	11	1,274	13	2
„ Law Charges	11	6	6			
„ Advertising Meetings	30	0	0			
„ Postage, Parcels, and Petty Charges	216	3	9			
„ Miscellaneous Expenses	92	1	2			
„ Carrington Donation				30	0	0
„ Water Research, Printing				2	16	6
„ Balance at Bankers				2,780	7	1
Including £500 "Challenger" Account, £1,700 Catalogue Account, and £247 8*s.* 6*d.* Water Research Account.						
„ Balance on hand, Catalogue Account	8	6	3			
„ Ditto, Petty Cash	8	17	8	17	3	11
				£10,025	2	10

Trust Funds.

	£	s.	d.	£	s.	d.
To Balance at Bank 12th November, 1893:—						
General Account	2,138	14	6			
Fee Reduction Fund Account	143	6	4			
Scientific Relief Fund Account	290	16	10	2,669	19	5
Joule Memorial Fund Account	97	1	9			
,, Scientific Relief Fund, Dividends, &c.	686	5	5			
,, Donation Fund, Dividends, and Transfer from Jodrell Fund	387	6	2			
,, Rumford Fund, Dividends	62	1	9			
,, Bakerian and Copley Medal Fund, Dividends	54	3	6			
,, Keck Bequest, Dividends	23	5	6			
,, Wintringham Fund, Dividends	31	19	10			
,, Croonian Lecture Fund, Rent	50	7	6			
,, Davy Medal Fund, Dividends	31	19	2	3,395	8	9
,, Gassiot Trust, Dividends and Bonds drawn	729	15	1			
,, Handley Fund, Dividends	186	2	4			
,, Jodrell Fund, Dividends	138	0	7			
,, Fee Reduction Fund, Dividends	435	19	7			
,, Darwin Medal Fund, Dividends, &c...	85	6	11			
,, Joule Memorial Fund, Dividends, &c.	149	15	5			
,, Brady Library Account, Interest	4	10	6			
,, Gunning Fund, Interest	60	0	0			
,, Buchanan Medal Fund	278	9	6			
				£6,065	8	2

	£	s.	d.	£	s.	d.
By Scientific Relief Fund, Grants	982	5	0			
,, Donation Fund, Grants	665	0	0			
,, Rumford Fund	....	....	....			
,, Bakerian and Copley Medal Fund, Medal, Lecture, and Gift	58	12	7			
,, Keck Bequest, Payment to Foreign Secretary	27	9	1			
,, Wintringham Fund, Payment to Foundling Hospital	38	7	4			
,, Croonian Lecture Fund Payments	54	4	6			
,, Davy Medal Fund, Gold Medals	62	16	0			
,, Gassiot Trust, Payments to Kew Committee, and Purchase	756	1	2	4,086	6	11
,, Handley Fund, Transfer to General Account, for Catalogue	186	2	4			
,, Jodrell Fund, Transfer to Donation Fund	138	0	7			
,, Fee Reduction Fund, Transfer to Royal Society General Account and Investment	573	1	0			
,, Darwin Medal Fund, Silver Medal and Gift	100	17	6			
,, Joule Memorial Fund, Investment	166	17	10			
,, Buchanan Medal Fund, Investment..	276	12	0			
,, Balance at Bankers:—						
General Account	1,897	19	9			
Fee Reduction Fund Account	6	4	11			
Joule Memorial Fund Account	79	19	4			
	1,984	4	0	1,979	1	3
Less—Scientific Relief Fund Account—overdrawn	5	2	9			
				£6,065	8	2

Estates and Property of the Royal Society, including Trust Funds.

Estate at Mablethorpe, Lincolnshire (55A. 2R. 2P.), rent £85 per annum.

Ground Rent of House, No. 57, Basinghall Street, rent £380 per annum.

„ „ of 23 houses in Wharton Road, West Kensington, rents £253 per annum.

Fee Farm Rent, near Lewes, Sussex, £19 4*s.* per annum.

One-fifth of the clear rent of an estate at Lambeth Hill, from the College of Physicians, about £52 per annum, Croonian Lecture Fund.

Stevenson Bequest. Chancery Dividend. One-fourth annual interest on balance of Bequest still in Court.

£15,200 Mortgage Loan, 3½ per Cent., to the Duke of Norfolk.

£14,297 8*s.* 5*d.*, 2¾ per Cent. Consolidated Stock { being £10,779 8*s.* 2*d.* on account of the following Funds:—

	£	*s.*	*d.*
Rumford Fund	2,330	0	0
Wintringham Fund	1,200	0	0
Gassiot Trust	400	0	0
Sir J. Copley Fund	1,666	13	4
Jodrell Fund	5,182	14	10

and £3,518 0*s.* 3*d.* in Chancery, arising from sale of the Coleman Street Estate.—General Purposes.

£913 0*s.* 3*d.* New 2½ per cent. Stock { £403 9*s.* 8*d.* Bakerian and Copley Medal Fund.
£509 10*s.* 7*d.* Scientific Relief Fund.

£3,000 India 3½ per Cent. Stock.—General Purposes.

£1,300 India 3 per Cent. Stock.—General Purposes (Earl of Derby's Bequest).

£800 Midland Railway 3 per Cent. Debenture Stock.—Keck Bequest.

£370 3*s.* 7*d.* Midland Railway 4 per Cent. Perpetual Guaranteed Preference Stock.—General Purposes (Stevenson Bequest).

£5,660 Madras Railway Guaranteed 5 per Cent. Stock { General Purposes, £5,000.
Davy Medal Fund, £660.

£10,000 Italian Irrigation (Cavour Canal) Bonds.—The Gassiot Trust.

£9,061 6*s.* 8*d.* Great Northern Railway 3 per Cent. Debenture Stock { Scientific Relief Fund, £7,200.
The Trevelyan Bequest, £1,861 6*s.* 8*d.*

£5,030 Great Northern Railway Perpetual 4 per Cent. Guaranteed Stock.—Donation Fund.

£2,725 „ „ „ 4 per Cent. Perpetual Preference Stock.—General Purposes (Stevenson Bequest).

£4,900 Metropolitan 3½ per Cent. Stock.—Fee Reduction Fund.

£258 9*s.* 2*d.* Metropolitan 3 per Cent. Stock—Buchanan Medal Fund.

£9,333 London and North Western Railway 3 per Cent. Perpetual Debenture Stock.—Fee Reduction Fund.

£20,908 „ „ „ „ 4 per Cent. Consolidated Guaranteed Stock.—{ £6,000 Scientific Relief Fund. / £12,150 General Purposes. / £2,758 „ „ (Stevenson Bequest).

£5,000 „ „ „ „ Consolidated 4 per Cent. Preference Stock.—General Purposes.

£5,000 North Eastern Railway 4 per Cent. Preference Stock.—General Purposes.

£2,760 „ „ „ Consolidated 4 per Cent. Guaranteed Stock.—General Purposes (Stevenson Bequest).

£2,200 South Eastern Railway 4 per Cent. Debenture Stock.—Darwin Medal Fund.

£4,340 South Eastern Railway 5 per Cent. Debenture Stock.—Scientific Relief Fund.

£3,333 London and South Western Railway 4 per Cent. Preference Stock.—General Purposes.

£4,798 Lancashire and Yorkshire Railway 4 per Cent. Guaranteed Stock.—Handley Fund.

£1,000 London, Brighton, and South Coast Railway Consolidated Guaranteed 5 per Cent. Stock.—Joule Memorial Fund.

£4,000 Southern Mahratta Railway 4 per Cent. Debenture Stock.—General Purposes.

£311 19*s.* 0*d.* on Deposit Account at Bank.—Brady Library Account.

£50 on Deposit Account on behalf of the Committee.—Joule Memorial Fund.

£1,600 on Deposit Account at Bank, Mr. Ludwig Mond's Gift.—Catalogue Account.

£1,000 Policy in the Atlas Assurance Office, becoming due October 7th, 1899, No. 24644.—Catalogue Account.

£1,000 Bond.—Dr. Gunning.—Interest to be applied to the promotion of Physics and Biology.

JOHN EVANS, *Treasurer.*

We, the Auditors of the Treasurer's Accounts on the part of the Council, have examined these Accounts and found them correct.

A. AINSLIE COMMON.
WILLIAM A. TILDEN.
M. FOSTER.

We, the Auditors of the Treasurer's Accounts on the part of the Society, have examined these Accounts and found them correct.

D. E. HUGHES.
ALEX. B. W. KENNEDY.
ARTHUR W. RÜCKER.